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THREADED CLOSURE WITH FLOATING LINER

RELATED APPLICATION

Reference is made to my copending provisional application serial number 60/395,798 filed July 16, 2002, to which a claim of priority is made.

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BACKGROUND OF THE INVENTION

This invention relates generally to the field of threaded closures used for beverage containers, and more particularly to an improved form suitable for use
5 where the contents of the container are under vacuum pressure, as distinguished from above normal atmospheric pressure.

Where the closures are used with containers for carbonated beverages, it is desirable that pressure be released as promptly as possible during unthreading, so as to avoid any possible champagne cork effect. The tamper-indicating means is
10 normally broken thereafter.

There are beverage containers which contain other than carbonated or pressurized contents, typically tea and the like, in which the contents are filled with hot contents, and when the closure is applied, a vacuum is formed within the container after cooling. In such cases, it is desirable that the tamper-indicating
15 means be broken before the seal is broken to relieve the vacuum pressure.

It is known in the art to provide a floating liner which accomplishes this end, but such prior art constructions do not usually provide an effective seal as desired, due to lack of sufficient sealing surface. Typically, such floating liners have relied upon a plug type annular projection on a lower surface thereof.

SUMMARY OF THE INVENTION

Briefly stated, the invention contemplates the provision of an improved floating liner closure construction as described above which comprises improved sealing surfaces which are compressed by the sidewalls of the closure as the
5 closure is engaged with the threaded neck of a container. To this end, the side wall of the closure includes a radially inwardly directed pressure block positioned above the upper terminal of the internal threads, which bears against an outer surface of an annular cylindrical tab as the closure is tightened.

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BRIEF DESCRIPTION OF THE DRAWINGS

In the drawing, to which reference will be made in the specification, Figure 1 is a fragmentary sectional view of an embodiment of the invention.

DETAILED DESCRIPTION OF THE DISCLOSED EMBODIMENT

In accordance with the invention, Figure 1 illustrates a known liquid
15 container 10 including a main body 11, and a generally cylindrical neck 12 bounded by an inner surface 13, and an outer surface 14. The outer surface 14

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includes a known tamper resisting flange 15 and externally projecting threads 16 terminating in an upper mouth portion 17 having a transverse end surface 18.

5 The closure 20 is typically molded from suitable synthetic resinous materials using known injection or compression techniques. It includes an end wall 21 having an outer surface 22 and inner surface 23, as well as a cylindrical side wall 24 having an outer surface 25 and a threaded inner surface 26. A lower end 27 mounts a known tamper-indicating ring 28 interconnected by frangible bridges 29, such that the ring 28 will separate from the side wall 24 as the closure
10 is unthreaded.

The side wall 24 includes an annular pressure block 31 of tapered configuration including a lower portion 33 disposed above the uppermost thread 34. As will more fully appear, with distortion, the block will exert a radially inwardly disposed force as the closure is tightened.

15 A floating liner 40 is independently molded, preferably of polyethylene, and includes a transversely extending main wall 42. A peripheral edge portion 45 is contained within the closure in a space formed by the pressure block, so as to be capable of limited axial motion relative to the closure. An inner plug member 46 of generally cylindrical configuration is adapted to enter the mouth of the
20 container, in a manner known in the art, and includes a cylindrical body 47 and a radially outwardly projecting sealing rib 48. Disposed outwardly of the body 47 is

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a wedge shaped top seal 50, which engages the surface 18 of a container. Radially outwardly therefrom is an outer side seal 52, also of cylindrical configuration, and relatively thin cross section. It is bounded by an outer surface which engages
5 the pressure block 31 and an inner surface which engages an outer surface of the upper mouth portion 17.

Operation of the closure will be apparent from a consideration of the drawing. After filling of the container, the closure is applied to the neck thereof in normal manner. As the closure is fully seated, the upper surface of the liner will
10 be pressed against the inner surface of the end wall of the closure, following which the sealing surfaces of the liner element engage the mouth of the container. The plug seal will become engaged first, followed by the top seal and the side seal. As the closures tighten, the pressure block will engage the uppermost thread on the container neck to be distorted radially inwardly, to press the side seal
15 against the outer surface of the mouth of the container whereby the sealing area is substantially greater than that obtained by the top seal and the plug seal.

When the closure is unthreaded, the tamper indicating means will sever before the vacuum seal is broken in normal manner. During this initial period of unthreading, the liner element will remain in sealing position. With continued unthreading, the
20 liner element will part contact with the end surface of the container neck. With further continued unthreading, the pressure block will part contact with the upper-

most thread on the container neck whereby the pressure block returns to relatively unstressed condition, thus releasing the side seal. The upper portion of the pressure block will then contact the peripheral edge portion of the liner element to
5 urge the liner element away from the container neck. As the side seal and top seal are broken, the plug seal will slide upwardly within the container neck, and gradually vent the vacuum pressure within the container.

I wish you to be understood that I do not consider the invention to be limited to the precise details of structure shown and described in the specification,
10 for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim: